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ABSTRACT

Two studies are reported in this paper. The first investigated whether computer-assisted instruction with cloze exercises would be more effective in teaching English to nonnative speakers than traditional paper-and-pencil methods. Subjects were 38 community college students of varying language backgrounds enrolled in several levels of English-as-a-Second-Language (ESL) courses and randomly assigned to experimental and control groups. The experimental group received instruction on computers with software based on textbook readings. Exercises consisted of text deletion and reconstruction. The control group received traditional instruction. All students were pre- and post-tested with the same 100-item criterion-referenced test specific to the course work. Results suggest the computer does aid in increasing both student motivation and information retention. The second study, with 54 community college ESL students at one instructional level, used only computer-assisted instruction with cloze exercises. Exercises in the experimental group were culture-specific. Results suggest that students using the computer-assisted, culture-specific readings work through material more quickly and gain more meaning than those using traditional readings. Useful software and suggestions for its application are offered, and other classroom computer uses are discussed. A 31-item bibliography is included. (MSE)

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Computer-Assisted Cloze Exercises in the Adult ESL Classroom: Enhancing Retention

BETTE EICHEL

Students taking laboratory -based English as a second language courses at an urban community college in Las Vegas, Nevada, have traditionally composed their assignments without the aid of an instructor, have had them graded by a teacher, and have read the responses regarding the error and style some time after the writing process had taken place. These students have experienced delayed feedback. However, the students have undergone two processes while attending class: they have both acquired and learned the second language (Krashen, 1982). Furthermore, the materials that have been used to teach these students have generally been specific to the culture of the target language. Since learners are more able to comprehend concepts that are related to their own culture, familiar material can aid in teaching second language learners to read. Readers bring to the text their own preconceived ideas, values and beliefs: In anticipating meanings of unknown words by utilizing context, forming schemata and formulating hypotheses, and testing those hypotheses (as more information is gleaned from the text), students learning a foreign language progress from the unfamiliar to the familiar and from the incomprehensible to the understandable.

Acquisition of the second language concerns developing an internal linguistic pattern which makes speaking the language natural and spontaneous. Learning (or Monitoring) is a self-correcting function which causes us to pause and improve our thoughts, sometimes before the thought has even been completed (Bialystok, 1978; Dulay, Burt, & Krashen, 1982).

With the recent introduction of computer-assisted language programs that are easy to operate and which can be set to a particular level and style of learning, ESL students can now receive immediate, nonjudgmental (and nonembarrassing) feedback while learning English. As instruction becomes more individualized, specific lessons can be developed for each student that take into account particular learning styles and interests (Chapelle and Jamieson, 1986). Specific readings about the culture of selected second language students provide a familiar basis for instruction in the second language. While reading material that is understandable,

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these students can more accurately guess the meanings of unknown words and terms by using context clues.

Even though efficient reading methods and accurate comprehension involve a balance of top-down and bottom-up reading skills and a constant interaction between these two processes (Eskey, 1988), ESL reading students may exhibit an over-reliance on one process (Carrell, 1988). Text-based information can be understood by students who possess a proficiency in the grammar and vocabulary of the second language; knowledge-based information is gleaned through the construction of schemata by using the readers' background knowledge and previous experience with the culture, beliefs, and values of the second language culture (Carrell and Eisterhold, 1988). As students approach native language fluency in the second language and demonstrate differing abilities regarding textual interaction (Grabe, 1988, 65), culture-specific reading materials are more easily comprehended.

The cloze exercise, a well-established method for assessing readability of texts (Taylor, 1953), measures the student's ability to infer meaning using contextual clues from a passage in which words and/or letters have been systematically deleted. Several computer-assisted language programs make use of the cloze design to exercise a variety of language learning skills at various levels of difficulty. Since reading is better taught from a whole language approach rather than as a set of isolated skills (Reinking, 1989), the cloze exercise can be an effective integration of literal and inferential levels of understanding.

Educators at all levels emphasize the need for more systematic evaluation of computer-assisted instruction. For example, Reinking (1988) reports in recent studies of junior high school students that reading printed and electronic text is not the same process for many students. The computer medium may foster a more meaningful interaction between the reader and the text, thereby enhancing reading comprehension. It is therefore important to us as educators to develop alternative computer-assisted programs that maximize classroom time and enhance learning. "Our understanding of L2 acquisition can be reflected in the intelligent use of computerized lessons and ultimately in the development of more 'intelligent' lessons" (Chapelle and Jamieson, 1986, 42-43).

The research question for the study reported here was the following: Does computer-assisted instruction make a difference in the acquisition of English? This question was examined by testing the following research hypothesis: There is no difference in the

scores of students using the CAI cloze exercises and the scores of those students who learn with traditional (paper-and-pencil) materials.

METHOD

The subjects were 38 community college students enrolled in several levels of English as a second language. These students came from a variety of language groups, of which Hispanics and Chinese predominated. Each student was administered a 100-item, criterion-referenced test (the ALFA Placement Indicator) specific to the curse work.

A classical experimental design was used, that is pre- and post-tests and random assignment to treatment and control groups. Both groups attended classes for two hours a day, four days a week for thirteen weeks, but the experimental group used a series of software programs based on textbook readings for fifteen minutes each day (working the remaining one hour and forty-five minutes in the language laboratory). The control group received traditional instruction during the time the experimental group was absent.

Experimental group exercises consisted of a text deletion and reconstruction program of various readability levels. Students reconstructed the text by guessing words or letters that might logically belong in the position. The process of reconstruction helps students gain insight into the structure of the English language and to develop an intuitive feel for various classifications of words, such as noun, verb, adjective, or article (Chomsky and Schwartz, 1983). The program is flexible enough to allow beginning ESL students the opportunity to participate.

During the students' initial sessions with the computer, trained personnel needed to be available to demonstrate how the computer and the software programs worked; otherwise, learning was hampered by difficulties due to unfamiliarity with the technology. Reaction to using the computer was overwhelmingly positive, but with a few exceptions. Students enjoyed learning basic computer operations and quickly became skilled in typing. While conducting screening interviews with students participating in the study, we found many ESL learners regard computer literacy an important goal second only to becoming proficient in English. During the pilot study prior to the main project reported in this paper, it was sometimes difficult to keep students on task; some preferred to

manipulate the computer to discover its operating abilities and limitations, while others were determined to program the computer (frequently resulting in a jam-up of the software). However, a few students reacted negatively to utilizing the computer as a learning resource. These same students learned typing at a considerably slower rate and became bored with the video-game approach to learning. Nevertheless, all subjects worked on the CAI exercises for the time period they had initially agreed upon.

RESULTS AND DISCUSSION

The mean, variance, and standard deviation for the combined test scores of pre- and post-tests were obtained for all subjects. The mean scores and variances of the control versus the experimental group scores were used to calculate the nonparametric t test of significant difference (Siegel, 1956). Selected groups of students (grouped either by means of the Mann-Whitney U test (Siegel).

The mean scores of the control and experimental groups did not differ significantly before administration of the treatment (computer-aided cloze exercises). In addition, the Mann-Whitney U test, used to test for statistically significant values with small samples, yielded no apparent pre-test differences between Chinese and Hispanic control and experimental subjects.

In the final results, the nonparametric t test, performed on post-test scores, produced values that were near, yet not significant (at the .05 level). Finally, analysis of Chinese and Hispanic students in the control and experimental groups produced no significant differences between treatment and traditional instruction. The treatment had no significant effect on enhancing the acquisition or learning of English.

However, analysis of secondary data revealed that computer-assisted instruction did increase retention of students in the ESL program. The attrition rates for the experimental and control groups were 25% and 38% respectively (compared to an overall college attrition rate of 43%).

Several limitations of this study concern the small sample size and the instrument used to measure proficiency. In nonparametric statistics for small sample sizes, a statistically significant finding that might have been determined by the statistical methods used on larger samples is not always realized. Furthermore, there were no provisions made to test for the effect of the computer itself in

instruction. Additional research is focusing on a questionnaire or an observational instrument to measure student reaction, both positive and negative, to CAI exercises and to aid in identifying learning variables not specified in this study. In addition, a current study at Clark County Community College concerns CAI using culture-specific readings versus CAI with traditional readings from the textbook (which exemplifies the culture of the United States).

Since performance on a mastery test of English language proficiency is usually not affected by a single factor, but is a complex interaction of factors (Ellis, 1987), identification of the specific variables that enhance learning via computer-assisted instruction would enable the teacher to integrate technological innovations into the curriculum and provide a more versatile methodology for individualized instruction. The cloze exercise, an efficient indicator of proficiency and readability (Aitken, 1977), coupled with an effective CAI program designed to match the independent learning level of the student could prove to be a powerful educational and motivational aid in the teaching of ESL.

Of recent interest are studies devoted to measuring motivational change due to computer-assisted delivery systems. Seymour et al. (1987) report on a marked improvement of attitude and an enhancement of motivation attributed to using CAI versus paper-and-pencil exercises. Although studies documenting exact effects of the computer as medium are sparse, recent research has focused on the motivational aspects of CAI from a number of standpoints such as retention, feedback, degree of learner control, and individualization of learning (Seymour et al.). Researchers studying the degree of continued interest in the learning task chose difficulty of the exercises and the gender of learners as variables (Seymour et al.). They found that an overwhelming preference for the computer medium (as measured by the students' return to task) far outweighed that of the paper-and-pencil mode of exercise, even though learner performance on a proficiency test was similar in both groups.

Preference for the computer-assisted instruction was almost unanimous for male and female students. Contributing to enhanced motivation were an increased feeling of self-control over the learning medium, the ability to pace instruction, and immediate feedback, hence less frustration. Although the findings of studies to date do not support generalizations about the specific factors constituting the computer's attraction, results suggest that computer use in the

classroom does, in fact, aid in increasing student motivation and retention.

SECONDARY STUDY

The present pilot study at Clark County Community College involves 54 students from one level of English as a second language. The students are predominantly Hispanic and Asian, upper-division learners who have an intermediate proficiency level in English as measured by the Michigan Test of English Language Proficiency. Most of these students plan to continue their postsecondary studies, either by remaining at the community college or by transferring to a university.

METHOD

The 54 community college students were administered the 100-item criterion-referenced test specific to the course work. Eligibility for the study was determined by test score: those students attaining between 85% and 100% and who demonstrated intermediate skills by writing a paragraph on one of several suggested topics were approached about volunteering for the study. Participants were told that they would be expected to spend extra time in the language laboratory typing stories and doing cloze exercises. Of 62 candidates, 58 agreed to take part in the study. Fifty-four of those students are currently working regularly on the project and attending class.

Students using the culture-specific materials play cloze procedure games using a varied selection of readings concerning the religion, thoughts, and ways of life identified with their country. They use a variety of programs such as *Storyboard* and *Clozemaster* (Holt, Rinehart & Winston) and *Missing Links* (Sunburst). The program features stories in which students can vary the deletion rate from every fifth word to all words, but they are not able to delete by word class. Students may play in pairs or groups, and they frequently compete for a higher score in language leagues. Accuracy and number of guesses or hints are compiled by the computer to produce a final proficiency score. One disadvantage of the software is that the computer is programmed to accept only exact word entries. Software that can manage a series of choices is

available, but instructors must enter the choices into the data file in order to adjust the course for specific needs and learning levels. Community College has not yet purchased this more flexible software.

RESULTS AND DISCUSSION

The preliminary findings indicate that students using the computer-assisted, culture-specific readings work through the material more quickly and are better able to determine the meanings of difficult words from contexts than those students working primarily with CAI of traditional readings. In addition, the experimental group has experienced a lower drop-out rate (one student) compared to the control group (three students). However, the results of the post-test and the conclusions reached from conducting statistical tests on the data will be more effective in determining if the culture-related materials did indeed make a difference in English language proficiency and retention of the adult ESL students.

COMPUTER-ASSISTED LANGUAGE LEARNING

The computer acts as a patient drill master, as an examiner, and as a tutor. The computer exercises provide the stimulus for guessing and testing the hypotheses generated by students interacting with the reading material in the medium of a word game. In addition, groups can work well at the same game, either in competition with each other or as teams. Granted, some students prefer to work in isolation and produce the same results, but the computer can enhance group interaction and cultural exchange. Communication between group members does not have to be in the target language, although the guesses entered into the computer must be (in an exact word scored program). Students who work with cloze exercises gain insight into the word that is deleted (Jones, 1984a); learners slowly develop understanding and a realization of the meaning as schemata are constructed and tested for validity (Jones, 1984b).

The development of schemata is enhanced by including unknown words in a familiar framework; culture-specific readings. The materials used in the present study are taken from collections of

stories that represent a majority of the cultures in the classroom. Students choose the deletion frequency and decide whether or not they will receive hints from the program. After the cloze selection is completed, students obtain a final score and can record their individual progress or compete with an opposing team. Some learners utilize the computer as a quizmaster by making short-answer exercises for the class; others (modeling the Language Experience Approach) type in stories they have written and have had corrected to be used as class exercises. The atmosphere of the classroom has been one of cooperation and a willingness to expand individual cultural awareness. Students feel more comfortable interacting with material that is familiar to them.

As learners read, they reflect on the topics to increase their knowledge and assimilate different beliefs and behaviors into the schemata they have already formed. Readers tend to distort text to fit their knowledge (LeSourd, 1988). Sensitizing students to the material can enhance comprehension: by teaching learners to skim and predict, providing an overview and a structure for discussion of the topic before the reading, formulating preview questions, and establishing an advance organizer, teachers can help learners to comprehend more of what they read, especially if the material is related to the student's own culture. The new concepts they encounter in the text are woven together with old knowledge in a hierarchical arrangement of ideas, providing students have some background information on which to build. The teacher can guide students to deeper comprehension by providing a framework of beliefs and values about the culture to be studied, so that the readings will "make sense."

Pugh (1989) maintains that intercultural readings in English which contain universal themes are more understandable than stories specific only to the second language culture. Reading does not have to be a laborious and frustrating exercise in translation and grammar but can be a rich and enjoyable language and cultural experience. By using materials that concern significant human problems which are universal to the majority of cultures (such as "literature"), we can spark interest and motivation to learn. Literature provides such a rich, comprehensible input and causes the reader to draw upon previous knowledge and preconceived ideas (schemata) of the experiences described. the readings used in the study reflected universal themes that could be understood by a majority of ESL students.

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Student interest was enhanced by utilizing material that contained information slightly surprising but which could be incorporated into the reader's existing knowledge base or schemata (Hidi and Baird, 1988). Concepts deemed incomprehensible were not included in the readings. For example, the theme of children growing up and becoming independent is universal, but it is expressed differently in various societies. Certain cultures would not understand and may even become offended by portrayal of the American teenager's rebellion against authority figures. Therefore, we chose to omit readings that we considered to be too culturally sensitive.

Hidi and Baird (1988) suggest that recall of ideas be enhanced by including selections that concern the knowledge base and the values of the reader. We found interesting materials regarding universal concepts in three ESL readers, *Stories from Latin America*; *Noah and the Golden Turtle*; and *Cross-Cultural Readings for Writers*. Intermediate reading level texts for the control group were taken from *Americana* and *Contact: USA*. Selections from these texts were used to construct the computer-assisted cloze exercises.

SOFTWARE AND SUGGESTIONS FOR USAGE

The computer programs utilized in the first and second studies were *Clozemaster*, *Storyboard*, and *Missing Links*. All of these programs have the advantage that students can preview the material for a certain length of time, anywhere from five seconds to indefinitely. The help feature allows students to obtain hints from the program in the form of one letter or whole word clues. Students familiar with the selection can choose to delete the entire text and reconstruct the reading through a series of guesses. They make a strategy for supplying the missing words; word class and frequency in the English language are taken into account in the guessing procedure, which requires a pooling of knowledge in the use of prediction skills, cohesion features of the language and specialized vocabulary (Jones and Fortescue, 1987). *Storyboard* has been used around the world to translate stories into different languages (Jones and Fortescue). A revised edition, *Storyboard Plus*, includes cassettes and pictures; students are asked to recreate the text using the tapes and diagrams.

Recent innovations in cloze design include *Customized Context-Clue Reader* (Merit Audio Visual), a series of programs available for reading levels 2-8. In addition, *Customized Subject Area Reading* is

an individually paced course that helps students read more effectively. The Teacher's Key allows editing and printing of material, including student records. *Cloze-Plus* (Milliken Courseware) is a series of modified cloze exercises in a multiple-choice format for grades 3 and up. The graphic rewards may enhance student motivation.

Word processing skills require an integrated skill approach just as the cloze procedure exercises do. *Magic Slate* by Sunburst allows students to type in their own stories and to do "guided writing" activities such as text correction or improvement exercises (for advanced level students). In addition, an extensive text correction program, *WordMAP*, now in place at Community College, offers grammatical and stylistic suggestions via computer analysis. Similar to *UNIX Writer's Workbench* by Bell Laboratories, *WordMAP* flags possible grammatical errors for the student to examine. Specific exercises using word-processing and grammar correction programs (Right Writer II) can be designed for individual classes. For example, students can be asked to rewrite wordy text, change singular forms to plural, masculine to feminine, reorganize the sequence of events, introduce transitional phrases into a piece of writing, etc. The advantages of using *Magic Slate*, or a similar word processing program, and *WordMAP* are that the student has mobility and can experiment with the text, a clean copy is produced, and the corrections students make can be temporary: the student stores his work and loads it into the computer whenever he is ready to continue creating. Special additional features are a spelling checker and a thesaurus.

OTHER USES OF COMPUTERS IN THE CLASSROOM

What are other uses of the computer in addition to drill-and-practice exercises and word games? Students and faculty demonstrate resourcefulness in designing learning activities using computers. For example, students can type stories and distribute them to the class for discussion of multicultural topics. Student-designed quizzes and comprehension questions aid in understanding the text. Students can also play quiz show, testing each other for comprehension and global cultural awareness. At the end of one semester, a booklet of stories can be compiled by the class for future courses and for the learning resources center. Guided readings and comprehension questions, writing topics, and discussion themes are

generated through student interaction with culture-specific materials. In other words, students take a more active interest in learning, and several studies have indicated that adults who are able to perform hands-on activities feel more in control of their learning processes and experience increased motivation (Knowles, 1980; Turner, 1988).

Clozemaster and *Storyboard* feature an authoring system which offers teachers the option of tailoring materials to student needs and interests that fit the curriculum. The writer program allows instructors to write and edit data and files, enter new data files (stories, vocabulary), delete superfluous information, and copy sections of the text over to another file. The printer option allows teachers and students to prepare quizzes and exercises from the texts. *Storyboard* accepts whole text entry, and it enables the user to move and correct text or to rewrite portions of the text. In addition, the authoring system can be learned in ten minutes, and the documentation is easy to understand. However, the program is based on exact word entry; there is no feature that includes a variety of acceptable answers.

Other programs of interest to the ESL instructor include commercial simulations that can be stopped and restarted at a later time without having to start and lose data. Generally, such programs require critical thinking and advanced planning to create solutions to the posed problems. Instructors may schedule the programs to complement modules of the curriculum. Additional problem-solving activities for groups feature games similar to those found in a video arcade. Interactive software will address the student by name and react to manipulation by displaying human-like responses.

Jones and Fortescue, in reviewing *London Adventure*, a game that responds to grammatical errors as a native speaker would, points out that the software contains a language teaching element, which the following example demonstrates.

The scene is kísok. A foreign student, wishing to buy a postcard, approaches the clerk.

Tourist: * "I like this postcard."

Clerk: "Yes, it is nice, isn't it?"

Inappropriate comments can cause misunderstanding but are not rejected by the program.

Software and cassettes enhance skills in dictation, following directions, filling in information in blanks, and study habits (note-taking, listening, forming questions). Databases can be created

from student book reviews and summaries. Critical thinking skills are enhanced as students devise techniques for searching through these databases to retrieve information. Other uses include writing weather reports and travel guides for specific countries, thereby introducing a multicultural element into the course. Some classes have even decided to operate dating services!

Computer-assisted language learning presents endless possibilities for the creative instructor and student to enhance the curriculum. An improved curriculum that relates directly to the learner and generates enthusiasm for learning English increases student retention and makes better use of technology.

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